

AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph beginning on page 2, line 11 of the substitute specification filed on September 18, 2006, with the following amended paragraph:

According to the invention, a valve comprising a shutter placed in a chamber provided in the valve body, one end of said chamber being provided with a seat which a ~~flap~~plug-forming part of the shutter rests against in a closed position of the valve and is remote from in an open position thereof and a magnetic control device including shutter magnetic drive means disposed outside the chamber for moving it either to its closed position or to its open position is characterized in that the magnetic control device further comprises at least one ball which is made of a magnetic material, disposed in the chamber and coupled to the external magnetic drive means, said ball being associated with the shutter in such a way that said shutter is driven in the chamber when the ball is moved by the magnetic drive means.

Please replace the paragraph beginning on page 5, line 14 of the substitute specification filed on September 18, 2006, with the following amended paragraph:

The shutter 20 has two main portions:

- a first portion ~~consisting of an amagnetic material flap forming a plug 121 made of non-magnetic material~~ which has a frustoconical section and is adapted to cooperate with the seat 116 of the valve in the closed position of the valve. The seal is reinforced by a seal 124 around the ~~flap~~plug 121.
- a second portion in the form of a stem 122 which is axially aligned with the ~~flap~~plug

and consists of ~~an amagnetic~~ a non-magnetic material such as stainless steel. The outside cross section of the stem 122 is everywhere less than the inside cross section of the chamber 12 so that the shutter 20 is able to move freely in the chamber 12 both ways along the axis A1.

Please replace the paragraph beginning on page 6, line 36 of the substitute specification filed on September 18, 2006, with the following amended paragraph:

At least one longitudinal groove 113 is machined into the inside wall 120 of the chamber to allow the fluid to pass on either side of the ball 123. At least two grooves 113 are preferably provided, as in the present example, evenly distributed at the periphery of the chamber: here two diametrically opposed grooves are shown. They are machined across the whole of the axial section of the chamber 12. The ball is trapped between two circular arc-shaped areas 114 that are separated from each other by the grooves 113, the distance between the two areas being slightly greater than the diameter of the ball, and the magnets are preferably disposed facing these areas. Thus the ball "rolls" preferentially on one of these areas, which constitutes a rolling area, according to the orientation of the magnetic field produced by the coils or magnets. It should be noted that the other area is not in contact with the ball, but facilitates centering it when assembling the valve; what is more, it could very well become a bearing area if the magnets were fitted the other way around, for example following a maintenance operation. When the shutter is moved to the open position, the fluid can flow in the two grooves 113 provided for this purpose.

Please replace the paragraph beginning on page 7, line 22 of the substitute specification filed on September 18, 2006, with the following amended paragraph:

The valve is moved to the closed position or the open position by moving the magnetic control device in the appropriate direction. Operation is optimized if the valve is positioned as shown in the figures, i.e. with the liquid inlet at the top and the outlet at the bottom, with the drive means disposed at a level lower than the ball when the valve is closed: with this kind of configuration, the ~~flap-plug~~ tends to be forced onto the seat not only by magnetic attraction but also by the static pressure exerted on the ball.

Please replace the paragraph beginning on page 8, line 1 of the substitute specification filed on September 18, 2006, with the following amended paragraph:

In the FIG. 3 embodiment, the valve 110 has a tubular general structure, is made from an ~~amagnetic~~-a non-magnetic material and delimits the chamber 12. The fluid flows in the gap between the shutter 20 and the chamber 12.

Please replace the paragraph beginning on page 8, line 6 of the substitute specification filed on September 18, 2006, with the following amended paragraph:

In this embodiment, in a similar way to what is shown in FIGS. 1 and 2, the its upper portion of the valve includes an orifice 115 that is adapted to be connected to a supply tank (not shown) and opens into the chamber 12. This orifice 115 has a section smaller than the cross

section of the chamber 12. The lower portion of the chamber 12 ends at a closure seat 116 adapted to receive a corresponding portion of the shutter 20. The seat has a frustoconical general shape and is extended in the downward direction by a cylindrical portion of smaller diameter than the chamber 12 forming the outlet orifice of the valve as such. The seat 116 seals the valve when closed by the facing ~~flap~~plug 121.

Please replace the paragraph beginning on page 8, line 20 of the substitute specification filed on September 18, 2006, with the following amended paragraph:

As can be seen in FIG. 3, the diameter of the upper portion of the stem 122 of the shutter is less than that of the chamber 12 and tends to increase in a frustoconical manner from the upper portion to the lower portion in which the ~~flap~~plug 121 is located.

Please replace the paragraph beginning on page 8, line 26 of the substitute specification filed on September 18, 2006, with the following amended paragraph:

In this embodiment, the first portion of the control device of the shutter 20 comprises two balls 123 offset axially and ~~diametrally~~diametrically. Two centering members 324 in the form of ~~amagnetic-non-magnetic~~ material lugs or fins for stabilizing the shutter 20 are placed on the stem 122 of the shutter 20 or alternatively on the inside wall 120 of the chamber 12 and center the shutter 20 in the chamber 12 at the same time as allowing free movement of the shutter 20; in

other words, a gap is left between the centering members 324 and the inside wall 120 of the chamber 12 or alternatively the stem of the shutter 20.

Please replace the paragraph beginning on page 9, line 1 of the substitute specification filed on September 18, 2006, with the following amended paragraph:

In this embodiment, the stem is provided with as many housings 124 as the device includes balls. Each housing 124 has dimensions such that when the shutter 20 is fitted, i.e. centered by the centering members 324, each housing receives a ball, which can turn freely in said housing and on the lateral inside wall 120 of the chamber 12.

Please replace the paragraph beginning on page 9, line 22 of the substitute specification filed on September 18, 2006, with the following amended paragraph:

In operation, the valve is normally held closed by the magnetic control device, which tends to cause the ~~flap~~plug to bear on the seat, as well as by the weight of the shutter 20 and by the static pressure that is exerted on the balls if the coils or magnets 132 are disposed at a level such that their force of attraction is below the ~~diametral~~diametrical plane of the balls and if the valve is disposed vertically as shown in FIG. 3 (with the ~~flap~~plug at the bottom). In use, the drive means 130 and therefore the coil(s) or magnet(s) 132 are moved and the magnetic attraction tends to move the balls that drive the shutter 20.

Please replace the paragraph beginning on page 10, line 17 of the substitute specification filed on September 18, 2006, with the following amended paragraph:

FIG. 5 shows another valve embodiment similar to those described above except that centering is achieved in a different way. In fact, the valve comprises two identical control devices, each of which includes two balls 123 placed on the same cross section of the shutter 20. The two devices are centered on the axis A1 of the valve but are offset longitudinally on that axis by a distance "h" and are offset circumferentially relative to each other, preferably at 90°, for better distribution of the lifting force and better centering of the shutter 20. In other words, the two balls of a first device are carried by a first plane passing through the axis A1 of the valve and the two balls of the second device are carried by a second plane passing through the axis A1 of the valve and perpendicular to the first one; also, the two balls of the same device are disposed on the same section perpendicular to the axis A1; the two balls of the other one are carried by a second section perpendicular to the axis A1 but offset from the first one by a distance "h". As shown, guiding is preferably completed in a manner known in the art by two perpendicular fins 524 interleaved with each other and offset longitudinally relative to the control devices, here placed downstream of the devices in the direction of flow of the fluid, and carried by the stem of the shutter 20. The stem 122 of the shutter 20 terminates in a frustoconical portion under which the ~~flap~~-plug 121 is situated.

Please replace the paragraph beginning on page 12, line 22 of the substitute specification filed on September 18, 2006, with the following amended paragraph:

The shutter 20 terminates in a ~~flap~~plug 121 in its lower portion extending the stem. A seal 829 preferably surrounds the ~~flap~~plug, as shown here.

Please replace the paragraph beginning on page 12, line 26 of the substitute specification filed on September 18, 2006, with the following amended paragraph:

The ~~flap~~plug has a frustoconical section intended to cooperate with a seat 116 of the valve to provide a seal in the closed position.

Please replace the paragraph beginning on page 12, line 38 of the substitute specification filed on September 18, 2006, with the following amended paragraph:

As can be seen in FIG. 8, the ~~flap~~plug is surmounted by another frustoconical section 821 that is surmounted by two perpendicular fins 825 interleaved one within the other that center the shutter 20 in the chamber 12 of the valve at the same time as allowing the liquid to circulate between the fins 825 at 950 (FIG. 9).